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ABSTRACT

The purpose of this research was to develop alternative models of a dissertation production system in educational administration. Interviews were conducted with 40 research administrators in public and private research settings; e.g., Bell Laboratories and the National Cancer Institute. Based on information derived from interviews and appropriate readings, three preliminary models were developed, and evaluative criteria were formulated. In addition, a 14-member panel was consulted. Each preliminary model was evaluated by the panel. On the basis of these evaluations, modifications of the models were made. Should these models prove viable, a more effective means of carrying out the dissertation activity will be available. (Author)

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TOWARD A PROGRAMMATIC KNOWLEDGE PRODUCTION SYSTEM IN EDUCATIONAL ADMINISTRATION: THE DEVELOPMENT OF ALTERNATE MODELS

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TOWARD A PROGRAMATIC KNOWLEDGE PRODUCTION SYSTEM IN EDUCATIONAL ADMINISTRATION: THE DEVELOPMENT OF ALTERNATIVE MODELS

Background

The following study was undertaken specifically for the purpose of developing alternative models of a programmatic knowledge production system in the field of Educational Administration. Further, the development of these models was based on the assumption that the important questions which currently face practitioners in the field are enormously complex, involving large subsidiary problems of both a factual and normative nature. For example, a question such as "What effects, if any, may we expect on pupil learning as a result of socio-economic or racial integration?" may generate further questions such as "What kind of learning?", "which pupils?", "What form of integration?"

Therefore, if research questions in educational administration are of a high order of complexity, it seemed logical to assume that definitive answers to any of these questions would not result from the efforts of a single researcher on a single large research problem. Rather, answers, if they were to be reliable and useful, would be as complex as the originating questions and would be the results of deliberately planned efforts of a large number of people over a significant period of time. In brief, such questions call for a sustained large-scale programmatic effort for their solution. At the present time, no large-scale programmatic effort of sufficient scope exists in educational administration. (Haller, 1970)

It would seem that if answers to important and pressing questions call for the construction of a large-scale programmatic research system, then a great deal of resources, i.e., federal financing, may be necessary to sustain the system. However, resources allocated to such a system are likely to evidence considerable variation over time, and such variations are not conducive to the solution of problems requiring sustained effort over a period of years. Thus it is concluded that a large-scale programmatic knowledge production system in educational administration is needed; and further, that it would be desirable for it to be relatively un-

affected by the uncertainties of government financing.

A second area of concern is the current research effort in educational administration. The vast majority of the research studies in educational administration, and by far the greatest amount of research effort, is represented by the doctoral dissertation of graduate students. According to Robbins (1970), in the academic year 1968-69 approximately one thousand students received a doctorate in educational administration. Each of these students wrote a dissertation which presumably represented a piece of research in this field. Using Berelson's (1960) estimate for education students generally, this massive effort represented approximately 900 man years of research expended in that single year. Indeed, the amount of research produced by students far exceeds that provided by the professoriate in educational administration. However, individually, dissertations rarely represent significant additions to the knowledge base of the profession nor collectively do they represent a sustained and systematic attack on major problems facing the practitioner. Moreover, this situation is not peculiar to the field of Educational Administration. The dissertation and its worth has been questioned by numerous educators in the past (Wilson, 1966; Heiss, 1970; Engel, 1966).

However, because of the current state-of-the-art in educational administration, it appeared that large research problems might be attacked through the use of the dissertation. This possibility is based on the following conditions:

1. The manpower is available; there are a large number of individuals doing dissertations.
2. The dissertation system is quantitatively productive; it produces a large volume of research each year.
3. The objective of the system would require little change; it is the only existing system in the field which has as its primary objective the production of knowledge.
4. The system is adaptable; it does not have a static membership.

Given the possibility that the dissertation system might be more effectively utilized, it is appropriate to ask whether any of the existing research models can

be applied to this field. This is based upon the general knowledge that research management models have been used by research administrators in organizing scientists to answer "large" research problems. Further, it was suggested that such models, or aspects of them, might be adaptable to the dissertation system. Thus the development of alternate models for a knowledge production system in the field of Educational Administration was undertaken.

Purpose

The present study was designed to: (1) describe the existing models of programmatic research systems outside academia and the dissertation system in educational administration; (2) develop preliminary models of programmatic systems based on dissertations in educational administration; (3) develop criteria by which programmatic research models may be evaluated; and (4) evaluate and revise the suggested models of a dissertation production system in educational administration.

Procedures

The first step in this study consisted of two phases. Initially, a review of the appropriate literature was made. Next, interviews were conducted with 40 research administrators in both public and private research organizations. These included: (1) industrial laboratories such as Bell Laboratories; (2) agencies at the National Institutes of Health, including the National Cancer Institute; (3) national and private funding agencies such as the National Science Foundation and Ford Foundation; (4) national laboratories including NASA; and lastly, (5) various departments and offices at Cornell University. The purpose of these interviews was to describe the existing research systems and to provide additional criteria for evaluating the effectiveness and efficiency of the models.

A structured survey-research interview schedule was constructed based upon the administrative process. In addition, the respondents were also asked for possible suggestions concerning the organization of students doing their dissertation in the

field of Educational Administration. Taped interviews were conducted with each of the respondents. A content analysis of these taped interviews provided the data which served as one basis for this study.

The second step in the procedure was the development of three preliminary alternate models of a dissertation production system in educational administration based on information obtained from the interviews and on the literature review.

The third step in the study consisted of developing criteria by which the three alternate models were evaluated. Havelock (1968) and Haller (1971) provided such criteria. These, however, were modified as a result of the literature review and on the basis of the interviews conducted in the research setting.

The final step in the study consisted of a panel of 8 individuals known for their research competence and their contributions to the field of Educational Administration. After the panel was presented with the preliminary designs, comments were solicited with respect to the feasibility of each of the models. On the basis of the criteria developed and the comments received from panel members, further modifications of the alternative systems were made.

Review of the Literature

The literature in the area of research administration pointed out the tremendous growth of large-scale projects, long term in duration, being undertaken to solve complex problems. One outcome of the emergence of these large-scale projects was a collaborative research effort directed towards their solution. In effect, management systems developed a mechanism which seemed to coordinate the efforts and energies of individual researchers towards the solution of these complex problems (Saben, 1967; Siepert, 1964; Bush and Hattery, 1956). Indeed it appeared that only through collaborative efforts - - efforts which involved the coordination and cooperation of individuals - - that the large-scale research problems which exist in today's society could be solved.

Further investigation into this area of collaborative activities brought to the

fore several pressing considerations directly related to the administrative process with the research community. The first consideration concerned the selection of the problem to be investigated. In effect decisions had to be made with respect to what problems to select and who would be responsible for their selection. The procedures used varied from organization to organization Hagstrom, (1962) found that scientists selected their problems; in contrast, according to West, (1960), federal agencies often set priorities and then solicited proposals from individuals who wished to conduct research in those areas.

A second consideration, once the problem was selected, was the task of organizing people to solve the problem. In this instance membership within the research community appeared to be divided almost exclusively into those individuals who create and/or discover facts and individuals who sift, interpret and correlate facts (Weinberg, 1967). Numerous studies were conducted on how people were organized to answer research problems. One study indicated that scientists performed more productively when closely associated with colleagues who shared a variety of experiences, discipline and values (Pely and Andrews, 1966). Another study reported that the research administrators played a significant role in large-scale organizations where research benefits were said to accrue (Kaplan, 1959). A more recent study by Smith (1971) suggested that heterogeneous team membership seemed to be associated with superior success. Another factor directly related with the organization of people was involvement. Participation, according to Sabin (1967) appeared to be dependent upon the extent to which the researchers were involved in the initial planning phase of the overall research project.

Over the course of the past several years many organizational schemes, i.e., management systems, have been developed. One such system included a formal structure for planning and budgeting at General Electrics Industrial Laboratories (Smith and Roberts, 1971). Conversely Sabin (1967) suggested a more informal, loosely organized structure. He believed the flatter the organization in terms of vertical hierarchy, the better.

Figures I - III represent the programmatic research models found at the National level. Figure I represents one office in the National Institute of Ecology; Figure II, tne programmatic research models for the National Cancer Institute, and Figure III represents a proposed division for the newly formed National Institute of Education.

Figure I

NATIONAL INSTITUTE OF ECOLOGY
Office of Forecasting and Planning

Function of the Office:

1. To forecast ecological problems arising from man's current and projected activities.
2. To make objective recommendations as to how ecological knowledge can be put to work in achieving long-range solutions to these problems.

Personnel:

Deputy Director

Responsibility: to develop teams of experts encompassing all of the particular talents the assignment may require

Full-time Professional Institute Staff

Function:

1. To evaluate requests and administer programs.
2. To identify competent and active scientists from a variety of environmental fields who have demonstrated reliability of performance and who are willing to accept short-term assignments.

Specialist from academic institutions, national laboratories, etc.

Function:

1. To participate as needed in team investigations of environmental problems accepted as suitable for study by the National Institute of Ecology.

Steps in Implementation of a Study:

1. A small team of two or three "generalists" would examine the situation, visit appropriate sites, and determine more precisely the exact nature of the problem and the particular scientific skills which should be brought to bear on the problem for a definite solution.
2. Upon receipt of the report from team #1, a second task force made up of the necessary specialists would be assembled to execute the more detailed study.

NOTE: Funding: Support for task forces are acquired from user contracts; initial financial support for planning and organizing the function is from private and governmental sources.

[1] National Institute of Ecology - An Operational Plan. Prepared by the Ecological Society of America and Peat, Marwick, Mitchell and Co. National Science Foundation Grant GB 6890-002 (December 1970), 12-15.

Figure II

NATIONAL CANCER INSTITUTE[2]

National Advisory Cancer Board

Composition: 12 appointed non-federal scientists and persons prominent in public affairs and 3 ex-officio members (the Director of the National Institute of Health and representatives of the Veteran's Administration and the Department of Defense.

Function: To provide recommendations on general policies, programs and needs in the field of cancer research.

Board of Scientific Counselors

Composition: Outstanding scientists.

Function: To serve as an advisory body to the institute on many aspects of its "intramural" research programs carried out by the in-house staff, or under their general direction by contracting laboratories.

Study Groups

Composition: Outstanding scientists from institutions throughout the country.

Function: To carry out programmed research, as cooperative multfaceted effort toward the prevention and control of specific forms of cancer.

Institutes Clinical Investigators

Composition: In-house scientists.

Function: To care for cancer patients admitted annually to the Clinical Center.

[2]The National Cancer Institute. U. S. Department of Health, Education and Welfare, Public Health Service. National Institutes of Health Public Health Service Publication No. 458 (1970) 2.

Figure III

NATIONAL INSTITUTE OF EDUCATION[3]

DIRECTORATE OF PROGRAMS

Function of the Office:

1. To identify systematically and descirbe major educational problems and opportunities in conjunction with the Center for Educational Studies.

2. To organize and manage comprehensive national programs of research development, experimentation, evaluation, and innovation directed toward the solution of major educational problems.

Staff and Structure:

Assistant Director for Programs — - - - Responsibility: Major staff assignments and budget allocation; quality of his program

Task Force* ——— Program Advisory Group

Composition: Program Manager; full-time staff in the Directorate Program, who would form the core of the task force; staff from the Directorate of R & D or Center for Educational Studies seconded for part-time service; and short-term staff in the Directorate of Programs, brought on to serve on a specific task force to which they bring knowledge.

Function: Development of a comprehensive, coordinated, but adaptive, multiyear plan of attack on the identified problem area, including interrelated research, development, experimentation, evaluation and innovation activities; contracting with appropriate agencies to carry out the components of the plan; monitoring progress in carrying out the play and changing it as appropriate; coordinating plans and activities with other R & D and operating agencies.

Composition: Government officials; local and state education officials; educators, e.g., principals; R & D personnel; community representatives.

Function: Advise the program manager and the Assistant Director of Programs on the design and conduct of the program and its association with practice.

*Several task forces would be formed for each problem to be addressed by the Institute.

[3]Levien, Roger E. National Institute of Education: Preliminary Plan for the Proposed Institute. California: Rand Corp., February, 1971, 114-123.

The preceding figures illustrated the various types of programmatic models found in research settings; although the models were similar in that they were relatively centralized, the components were different and they performed different functions.

Factors Related to Programmatic Effort.

Several factors were considered in attempting to organize people to effectively solve problems. One such factor was the area of communication. Poor communication accounted for wasted time, effort and in efficiency (Sanders, 1964). Several communication techniques were recommended for example, the establishment and maintenance of meetings and task forces and the circulation of working papers prior to a meeting which would serve as a tool to facilitate the carefully thinking through of an approach to a problem.

A second factor closely related to the communication was the area of scientific incentives and/or the reward system operating in every organization. Recognition from the scientific community was perceived to be the most important reward for the individual researcher (Kanter, 1964; Hagstrom, 1965). Salary and promotion, while of some consideration, seemed to be relatively less of an incentive (Hagstrom, 1965).

Implicit either directly or indirectly in the incentive or reward system was evaluation. Evaluation concerned the evaluation of individual researchers and/or the evaluation of the total research operation. Criteria for evaluation were reported by Rankin (1956) and Gephart (1970). Although the criteria were stated there did not appear to be an effective measurement developed. Recently however, economic measures of benefit were applied in the evaluation of research activities. Project Hindsight, a study undertaken by the Defense Department, attempted to employ economic measures in terms of research out-put. One conclusion drawn from the study was that conscious planning contributed to the effective accomplishment of a programmatic research effort (Sherwin and Isenson, 1967).

Theoretical Models.

It seemed to follow logically from the above findings that the ways in which

people were organized within the research setting could contribute significantly to the overall effectiveness of their organization. Furthermore, each organization whose efforts were directed towards programmatic research had certain similarities but yet have differences. The areas common to all were the sources of ideas, project selection, liason relationships, and informative services. Moreover, what also existed in research societies was a structure or theory which characterizes their operation (Rath, 1968). This structure and/or theory was commonly referred to as a model.

One such model, known as the convergence technique, was a method of planning and managing extensive research programs. This technique combined system analysis, comprehensive interdisciplinary planning of the proposed research program, and management of the research program as an information-generating and maintenance mechanism which was self-correcting. The convergence technique had been employed by the National Cancer Institute with promising results (Carresee and Baker, 1967). The technique was also applied to basic studies of the reading process.

The adaptability of the convergence technique to research programming in various organizations has met with some difficulty. For example, organizations like the National Cancer Institute had operational laboratories which allowed organizers of a planning team to step into a laboratory and reassign competent scientists to the planning activity. Few universities had the range or quality of personnel necessary for a planning team (Gephart, 1970).

A second model, the Interface (Black Box) Model, (Goode and Machol, 1957), was characterized by two basic features: (1) an insistence upon a clear specification of all factors affecting the system, e.g., inputs and outputs; and (2) an attempt to translate all external factors, including environment, to a common base. Although the model specified all the inputs and outputs from a system in great detail, it had been criticized because it fails to consider the structure of the system's elements (Goode and Machol, 1957).

The above models served as a frame of reference for both describing and

analyzing the organization. They established a structure for gathering data, generating hypotheses and predicting behavior (Rath, 1968). In addition, models were developed to gain a more complete understanding of certain mechanisms and factors involved in order to facilitate decision-making. It appeared that collective models for decision-making were beginning to emerge, due primarily to the fact that the complexities of most situations in present day society "outstrips the capacity of the single human brain" (Longton, 1966, p. 559).

One author maintained that models must operate at two levels, the organizational level and the decision-making level (Rath, 1968). In the former, the model showed the structure of individual decision-making units (people and their relationships to each other). In the latter, the model showed the relationship of the individual decision-maker to his environment in context with the inputs and outputs of the system.

The literature review in the area of educational administration failed to produce any type of decision-making models. Such a model might exhibit several characteristics suggested by Rath (1968). These characteristics of a useful model were: (1) operational, (2) realistic, (3) modular, (4) predictive, and (5) satisfiable. The operational characteristic implied that the user was able to measure the various concepts and attributes of the model. The model was realistic in the sense that it included all the necessary key features in a manner that was both recognizable and operationally definable. Moreover, a useful model displayed a modular characteristic in that it allowed the user to abstract at various levels the important elements in the system. In addition, the predictiveness of the model allowed the user to predict the behavior of the system even when some elements of it were changed. Finally, a useful model was satisfiable in that it allowed the user to manipulate the various elements in the model in order to achieve satisfactory results.

Interview Data

The following information was derived from interviews conducted with 40 key administrators in both public and private research settings. Table I summarizes the field and area of employment of the sample.

TABLE I

Field and Area of Employment of the Sample

Area of Specialization	University	Industry	National Public Organizations	National Private Organizations
Science	6	10	0	5
Social Science	8	0	4	4
Other[a]	3	0	0	0
Total	17	10	4	9

[a]Research Administrators at the university who were primarily responsible for administering grant monies from public or private sources irrespective of discipline affiliation, e.g., Assistant Director of Academic Funding.

The presentation of data was organized around the components of the administrative process incorporated into the interview schedule. These were: (1) Initiation and Problem Selection; (2) Planning; (3) Organization; (4) Coordination and Communication; (5) Budgeting; (6) Staffing; and (7) Evaluation. In addition, data pertaining to suggested organizational changes with regard to the dissertation process were presented.

The Administrative Process

Initiation and Problem Selection. Several conclusions can be drawn from the interview data regarding initiation and problem selection. First the initiation or selection of problems based on individual interest was substantially less than problems initiated by external sources, 19% of the respondents stated that the problem originated with the researcher while 70% stated that the problem was externally initiated from clients, e.g., solicitation for proposals by governmental

agencies. The other 4% of the respondents indicated that their research was a combination of being both individually and externally initiated. Second, organizational devices were present which helped facilitate the selection process, for example, a "matchmaking" role emerged in which the problem area and the researcher were matched by the research administrator. Third, organizations appeared to allow the scientist to select his own problem. Moreover, this preservation of scientific freedom seemed to be an important consideration; however, these same organizations seemed to initially recruit those researchers with whom they had similar interests and goals.

Planning. Once the problem had been identified, planning for its solution took place. The issues and problems in this phase of the research operation concerned decision-making with regard to the establishment of goals, objectives, and problem definition as well as the allocation of the necessary resources. With regard to the latter 51 percent of the respondents (17 out of 32) reported that the lack of resources and/or the allocation of resources, i.e., manpower, facilities, and funding were often formidable obstacles necessary to overcome during this initial phase of the research operation. A second difficulty arose with regard to decision-making. In this instance 37 percent of the respondents stated that differing opinions concerning establishing goals, stating objectives, defining the problem and selecting sub-problems also presented difficulties. Further 22 percent of the respondents (7 out of 32) mentioned that interesting the "right" individual to participate in a specific project was often difficult.

The planning procedures for attacking the problem appeared to be somewhat diverse although, as mentioned, consistencies seemed to appear in determining the availability of resources and problem definition. The overall organizational patterns seemed to be, relatively speaking, somewhat distinct. The following Figures IV - IX were developed directly from the interview data. Figure IV summarized the planning function employed in the field of agriculture at the university. This centralized model was composed of a number of formal mechanisms, e.g.,

advisory board, task force, satellite group and so on.

FIGURE IV

Organizational Scheme for Planning:
University - College of Agriculture

Advisory Board - - - - - - -	Composition: Representative group of experts from all departments.
	Function: To act as a resource and support group.
Extension Service - - - -	Composition: Professional Staff.
	Function: To set priorities; to provide a link between the farmers and the university.
Task Force - - - - - - - - -	Composition: Researchers, i.e., professors, selected by the staff.
	Function: Plan how the work will be accomplished; to break down the problem into sub-problems; to take a sub-problem and bring it to a satellite group.
Satellite Group - - - - -	Composition: Professor and students.
	Function: To decide on who is interested in working on the problem and to further decide on what aspect of the problem each member will individually attack.

A more decentralized model, also at the university level, was employed in a special project directly under the sponsorship of the United States government. The problem selected in this instance was initiated by the federal government who in turn selected a professor of psychology to mobilize individuals with demonstrated competence in the area of psychology to work on the problem. Except for several small meetings no formal organization devices were established. Basically the individual professors who were interested in working on the problem selected their own subsidiary questions to answer and developed their own plans of attack. Figure V illustrates the components and function of this model.

FIGURE V

Organizational Scheme for Planning:
Psychology Project

Project Director - - - - -	Composition: A psychology professor recognized as an expert in his field.
	Function: To assume the role of an impresario; to travel 4 to 5 months and select individuals who would make a contribution.
Seminars - - - - - - - - -	Composition: Individuals selected by the project director as having research competence in the area; additionally, each professor brought his best graduate student to the meeting.
	Function: To stimulate ideas.
Professor-Student Team - -	Composition: Same as above.
	Function: To conduct research in the given problem area.

An interesting feature of the above model was that each professor was obliged to bring his best graduate student to the seminar meetings. This was a deliberate effort on the part of the project director to promote and perpetuate further research in the area by interesting young potential researchers in the problem.

Two other planning procedures employed by the National Cancer Institute and the National Heart and Lung Institute are illustrated in Figures VI and VII. Both of these institutes reported rather complex formal structures. The National Heart and Lung Institute seemed to employ objective indices such as PERT Charting and Systems Analysis to determine the direction of the research program. In contrast, the National Cancer Institute seemed to rely on a number of advisory boards to make recommendations and further to insure that a system of checks and balances on the research activity existed. In this instance the advisory boards approved and reviewed the activities of the institute. Regardless of these differences both of these models have highly developed centralized structures consciously designed to direct the efforts of a number of researchers toward the solution of a large-scale

complex problem.

FIGURE VI

Organizational Scheme for Planning:
National Heart and Lung Institute

1. PERT Charting	
2. Systems Analysis	
3. Staff Meetings - - - - -	Composition: 3 experts in the particular problem area.
	Function: To discuss the results of the system's analysis; to develop a program plan.
4. Request for Proposals -	Solicitation of proposals aimed at the development of various aspects of the program.
5. PERT Charting - - - - -	Function: Continuous evaluation of the program.

FIGURE VII

Organizational Scheme for Planning:
National Cancer Institute

Advisory Board - - - - -	Function: To review activities; to suggest areas of expansion and/or discontinuities; to approve every activity conducted by the Institute.
Director of Planning - -	Function: Coordinative function with regard to personnel and program.
Management & Scientific Planning Specialist Team -	Function: To initiate the program
Branch Chief - - - - - -	Each of the 4 program areas has a branch chief who is the equivalent of a scientific director.
	Function: To review on-going activities.
External Advisory Board -	Composition: Scientists.
	Function: To review activities of the program area with which they are associated.

Both of the above figures illustrate how the planning process was approached. The actual research for both institutes was conducted by in-house scientists connected with the various laboratories at the respective institutes and by scientists at other research settings; i.e., universities or private independent laboratories who had been contracted to conduct research in the given problem area.

Another highly centralized model for planning was found at the National Aeronautic and Space Agency (NASA). Figure VIII shows the complex structure that existed during the planning phase of the research activity.

FIGURE VIII

Organizational Scheme for Planning:
NASA

Associate Director - - - - -	Function: To initiate planning on a problem.
Assistant Director - - - - -	Function: To identify and assemble people into a planning team; selection is made on the basis of acknowledged expertise in the area.
Steering Committee - - - - -	Composition: Senior technical people who are recognized as experts, they are selected by the Assistant Director. Function: To meet and discuss the general problem, to bring back-up data to the meeting and to discuss the broad approach to be taken, to select an ad hoc work group.
Ad Hoc Work Group - - - - - -	Composition: A smaller number of individuals who were also members of the steering committee. Function: To draw up more specific plans for attacking the problem; each member develops a specific task that would fit into the overall problem.
Researcher - - - - - - - - -	Function: Each member of the ad hoc work group would go back to his laboratory and/or center and develop more specific lower level plans that would fit the overall problem.

Following the development of lower level plans the researchers would convene again into the ad hoc work group and collate all the data that accrued from the lower level tasks. In this situation a three-pronged approach was used upon which to base decisions. The approach was simply to answer the following three questions: (1) What would we do if we started today?; (2) What would we do if we started two years from now?; and (3) What would we do if we waited until we have all the technical information necessary?

The answers to these questions determined the fate of the problem. For example, the respondent stated that during the initial planning phase of the problem selected for investigation, the Ad Hoc Group found that every approach cost more money than they could afford. In addition the group found that they could not start today because they didn't have the technical information they needed. Also, it was projected that this information would not be available until 1980. Therefore, it was decided to wait two years to see what kinds of information would then be available. Two years later there was information "popping up" and a new program was begun by taking only the major elements of the original program due to the expense involved.

Subsequently the Steering Committee was reconvened to review the revised program. This committee prepared the program report and included their own projections. This report constituted the preliminary plan.

The final planning strategy to be discussed is one that was used at Bell Laboratories. This industrial laboratory also employed a rather centralized approach to planning although it appeared to be somewhat less complex than the strategies present in national laboratories. Figure IX illustrates the components of the model. These components consisted initially of a task force followed by a group of individuals, each of whom was responsible for a specific aspect of the problem. In addition, the liason role of the supervisor was of particular importance; in effect it was the supervisor who assumed the linking role. That is, it was the supervisor who coordinated the activities of the various members and/or

groups.

FIGURE IX

Organizational Scheme for Planning:
Bell Laboratories

Task Force Chairman - - - - -	Function: Responsibility for the overall project.
Task Force I - - - - - - - - -	Composition: Department heads and supervisors.
	Function: To determine manpower needs; to select from within its membership a second task force of smaller more workable size.
Task Force II - - - - - - - - -	Composition: A smaller, selected group of Task Force I members.
	Function: To assign individual tasks; to meet periodically to report progress.

Several conclusions can be drawn from the above discussion. First, it appeared that there are many different and distinct methods of planning, ranging from decentralized to highly centralized approaches. Additionally, planning was either accomplished by the individual or by a group of individuals.

Second, it appeared that the planners are the ones who make firm recommendations which are the basis for decision-making. For example, in many instances, task forces were set up to study problems and to provide opportunities for an interchange of ideas. In effect they provided a mechanism by which resources were obtained, problems were defined, and interest in a given problem area was promoted. Other organizational devices such as the Ad Hoc Group and Steering Committee at NASA made decisions and projections regarding the feasibility and future of the particular research activity.

Initial planning was usually accomplished by primarily making decisions regarding the allocation of resources, i.e., what are the needs in terms of manpower,

funds and facilities, and breaking down the complex problem into subsidiary questions, the answers to which would contribute to the solution of the complex problem.

Organizing People to Solve Complex Research Problems. The basic issues or problems involved in organizing people to solve complex problems appeared to be of two types. First, 35 percent of the respondents cited coordination of the individuals efforts as a major problem. Second, 31 percent of the respondents stated that selection of "the people" involved was a critical issue in the conduct of the research endeavor. Moreover, it appeared to be quite necessary to include within a group only those individuals who had exhibited an ability to work together as a team. When asked to describe the characteristics of a successful research group, 40 percent of the respondents (14 out of 35) mentioned team spirit, the ability to get along with one another. However, the most important characteristic of a successful group was competency. Of the respondents 77 percent (27 out of 35) stated that expertise in a given problem area was a necessity.

From the interview data additional information concerning how people were organized to solve large complex research problems emerged. First, there was no one set pattern of organizing people in a research activity. Rather, the type of problem, i.e., whether it could be clearly defined or not, dictated the methods employed. Second, more role differentiation within the research community was apparent. The role of research administrator emerged and it was the responsibility of this individual to facilitate the research activity; in effect, he was often the catalytic or linking agent. Third, individuals were organized into teams, i.e., task forces, ad hoc groups, advisory boards, and the like. Their selection was primarily based on their expertise in the given problem area.

Communication. The following conclusions were supported by the interview data on communication. First, seminars were the most frequently employed organizational device. Essentially they served three purposes: (a) as a forum for visitors;

(b) for peer/colleague evaluation of a project; and (c) as an information retrieval mechanism, e.g., literature seminars.

Second, organizational devices such as the circulation of preprints, technical memoranda, etc., were employed.

Third, several disciplines had established national information retrieval systems which aided in dissemination of knowledge.

Fourth, formal channels of communication, e.g., the clearing-house activity at the materials science center, were designed to supplement, stimulate and promote informal communication.

Fifth, informal communication was perceived to be an important part of the research activity. Personal contact among researchers through luncheon meetings and the like was seen as having a positive relationship to the research activity.

Sixth, the research administrator was perceived to be of importance in terms of coordinating the research activity and facilitating the flow of information.

Staffing. Staffing was another area within the administrative process that was investigated. The two most pressing staffing issues and problems were related to the hiring and retention of personnel.

Several conclusions were drawn with regard to staffing. First, different organizations employed different methods of selecting personnel. Industrial laboratories selected on the basis of talent, national agencies appeared to select on the basis of organizational needs, and in contrast, universities appeared to select on the basis of both teaching and research competence which was in direct response to a predetermined organizational need.

Second, all organizations appeared to attempt to retain their personnel through a reward structure. Further, the allocation of rewards was based upon predetermined criteria. Primarily, the rewards were allocated according to the productiveness of the research. That is, a researcher who accomplished his goals and solved the problem under investigation was rewarded. Financial incentives and recognition from colleagues, co-workers and the research community at large were perceived to be the

most desired rewards.

Evaluation. In brief the interview data with regard to evaluation indicated that: (1) evaluation served three purposes: (a) to review the accomplishments of the research activity, (b) to provide a basis for future decision-making, and (c) to provide a mechanism by which information through reports, articles, and publications could be disseminated; (2) two techniques of evaluation were used: (a) written progress and/or final reports, and (b) peer and/or supervisor evaluation; (3) evaluation took place on two levels: (a) at the researcher level, and (b) at the project level; and (4) centralized and decentralized forms of evaluation existed in various organizations.

In addition a fifth conclusion related to the evaluative criteria. The most frequently stated criterion for evaluation of the research activity was achievement in terms of contribution to knowledge, the accomplishment of objectives and the impact of the research results.

Budgeting. The final area in the administrative process to be discussed was budgeting. The usual response from research administrators in this regard was ". . . you need money to do a good job." The issues and problems concerned setting research priorities, that is, determining which projects should be selected for investigation when limited funding was available. A second issue involved the alternatives to funding. This was a particularly important area in situations where funding was either limited or non-existent.

Of the respondents, 90 percent (17 out of 19) stated that the allocation of funds to a particular problem, i.e., setting priorities as to which project should be supported, was perceived as a major difficulty in budgeting. In order to cope with this difficulty it appeared that all organizations employed some criterion on which to base their decisions. Two criteria seemed to be employed by the majority of organizations. The first criterion, mentioned by 35 percent of the respondents, was assessment. That is, the problem was assessed in terms of whether or not it

contributed significantly to the needs, goals, and objectives of the organization. The second criterion, cited by 20 percent of the respondents, was relevancy or importance of the problem. In this instance the practicality and marketability of the research and/or its contribution to the knowledge base of a discipline were of prime consideration.

Collaborative Effort

As an adjunct to the communication and coordination components of the administrative process, attitudes towards collaboration were explored. Since this entire study was premised on the assumption that programmatic research on large-scale research problems involved a collaborative effort, it was deemed appropriate to investigate the advantages and disadvantages of such efforts. The most frequently cited advantage of collaborative research was diversity. Of the 35 respondents who were asked the questions, 74 percent noted that the various individuals who brought different specializations and expertise to bear on a problem helped facilitate the problem solving effort. In contrast although 97 percent of the respondents (33 out of 34) who were asked the question concerned with disadvantages agreed to their presence, most dismissed them as insignificant in terms of contributions and achievement they made to society.

Suggested Changes in the Dissertation System

The final question on the interview schedule was related to suggestions for changing the existing dissertation system in educational administration. The primary problem discussed with the research administrators concerned how professors and students at various universities who are separated by geographical barriers could become involved in collaborative research projects.

Specific forms of coordinating mechanisms were mentioned, 38 percent of the respondents recommended that planning sessions be held. Other recommendations concerned the researchable problem itself and its subdivision into subsidiary questions. A different approach was suggested by several other respondents who felt that the

establishment of an institute specifically designed for research purposes might be a possible change.

A less formalized, rather decentralized approach was suggested by a researcher at the National Institute of Mental Health. She suggested:

> . . . begin at the level of the professors getting involved. Try to get some small funding for face to face contact of graduate students from other universities . . . stress the smallness. The basic mechanism is building face-to-face working groups. Once you know each other through good conferences, then you can manage to do a lot of things by long distance.

One industrial researcher at Knolls Laboratory summed up the situation when he was asked to suggest changes for the dissertation system in educational administration:

> . . . That is a really difficult problem . . . National experience is the only way you can solve large problems . . . bring people together.

Table II shows the various suggestions made by the respondents. Frequencies and percentages in terms of the number of responses were reported.

TABLE II

Suggested Dissertation System Changes

Question	Categories of Responses	Examples	f	%
What suggestions would you make for organizing students doing their dissertation in the field of Educational Administration.	1. Linkage	Role of impresario or coordinator	14	22
	2. Seminars for planning		13	20
	3. Identification of interesting and important problems		12	19
	4. Professors and students interaction	Professor identifies problems for student to work on -- usually a part of his own research	8	12
	5. Advisory Committee Approach	Task Force - Steering Committee (responsible for defining large problem area and establishing priorities)	7	11

Question	Categories of Responses	Examples	f	%
	6. Establishment of Institutes or Centers		5	8
	7. Establishment of large data bases		1	2
	8. Conferences		4	6
	9. No change		1	2

N= 34

Number of responses = 65

Alternate Model Development

The development of alternative systems of dissertation production was based in part upon the previously cited research and on the comprehensive survey of selected literature on research administration. In summary the information derived indicated what seemed to be several essential aspects of coordinated research systems. First, several mechanisms appeared in the form of a committee structure which facilitated the following activities: (a) selecting problem areas that need investigation and the subsequent setting of priorities; (b) planning for the investigation in terms of appraising the system to determine what resources were needed and what approach should be taken, i.e., individual or team; (c) subdividing the problem area into subsidiary questions for individual researchers and/or for teams to attack.

Second, it appeared that the research activity was programmatic; i.e., consciously designed. Further the various levels and/or committees were usually interdependent. Moreover, the composition of each committee was primarily based on the competencies the individual had with respect to a given problem area. In some instances advisory boards, similar to those at the National Cancer Institute, were composed of people outside the organization, some of whom were practitioners that could benefit from the research but who were not directly involved in the activity.

Essentially these boards served to review the on-going work.

Third, various mechanisms in the area of communication were used to facilitate information flow. Several organizational procedures such as seminars designed to report on progress and to obtain suggestions and criticisms from colleagues and the circulation of pre-prints or working papers prior to a meeting. This afforded the group the opportunity to think about the contents of the paper prior to the meeting, thus facilitating the subsequent discussion on the topics.

Basically, the following models attempt to direct research efforts while maintaining some of the flexibility and freedom necessary to the creative research process. Each of the models, i.e., (1) the Centrally Organized Research Model (COR); (2) the Professor Initiated Research Model (PIR); and (3) the Research Package Model (RP), is presented in diagram format followed by a detailed description of suggested procedures.

Model I: The Centrally Organized Research Model

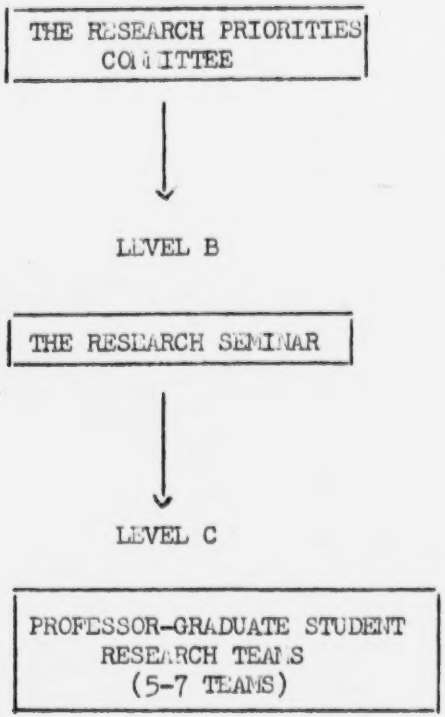
Model I was devised from the procedures described by research administrators in interviews conducted in industrial and national laboratories [e.g., Bell Laboratories (Figure IX), National Cancer Institute (Figure VII)], and the literature on research societies. Basically the interviews revealed in these instances a hierarchical organization where: (1) the research priorities were established by a designated committee; (2) task forces composed of researchers then took those priorities previously established by the committee and divided them into subsidiary questions to be answered by individual researchers in their laboratories.

In its simplist form the COR Model consists of three levels. These levels serve three essential purposes of (1) setting priorities as to what problems need investigation (The "Research Priorities Committee"), (2) defining the research implied by these problems (The "Research Seminar"), and (3) designing and conducting the research itself (The "Professor-Graduate Student Research Teams"). A diagram of the model and a more detailed description and explanation of how it might operate follows.

Model I

PRELIMINARY COR MODEL

Centrally Organized Research Model



Purpose: To produce decisions about what knowledge is most needed in the field of educational administration.

Composition: A small group of individuals appointed by the UCEA Executive Council.

Product: A set of high priority problems to be subdivided into subsidiary questions by the Research Seminar.

Purposes: (1) To transform the problem area, described by the Research Priorities Committee, into a series of subsidiary research questions which were implied in the problem; (2) to coordinate the research efforts of its members to insure that the research produced would be cumulative; (3) to integrate the research produced into a coherent whole.

Composition: Professors (5-7) at various universities identified by the Research Priorities Committee and the UCEA Executive Council as having specialized research competence in the given problem area.

Product: A series of subsidiary questions to be researched by the Professor-Graduate Student Research Team.

Purpose: To design and conduct the actual research necessary to answer the subsidiary questions.

Composition: A professor, who is a member of the Research Seminar Group, and his doctoral students compose each team.

Product: Dissertations which deal with various aspects of the subsidiary questions.

LEVEL A

THE RESEARCH PRIORITIES COMMITTEE

The purpose of this committee would be to produce decisions about what knowledge is most needed in the field of Educational Administration. This might be done as follows:

1. The UCEA Executive Council might appoint a committee of (say) seven individuals, with the charge to define and order a set of major problems facing the field. In the committee's opinion, these problems are those which are most in need of solution and appear to be susceptible to research. This committee would constitute the Research Priorities Committee.

2. The Research Priorities Committee would meet several times over the course of a year. The initial meeting could be preceded by the circulation of prepared papers from each member delineating high priority problems. Subsequent meetings would then be concerned with more fully defining and describing these problems and ordering them as to their priority. The cost of such meetings would be borne by UCEA.

3. After agreement is reached on major problems and research priorities, the Research Priorities Committee would prepare and submit to UCEA a paper describing these problems and the nature of the research they imply. In addition it would submit a suggested list of researchers who, in the Research Priorities Committee's judgment, have the necessary expertise to conduct the necessary research -- i.e., separate lists would be prepared for each problem area.

4. The UCEA Executive Council would determine which one, if any, of the problem areas would serve as the focal point of a concerned research effort. In addition, it would name a committee of researchers (say seven) who had indicated a willingness to join in the project. These researchers might be drawn from the list suggested by the Research Priorities Committee, supplemented by individuals suggested by the Executive Council. This committee would constitute the Research Seminar. Several UCEA member universities would undoubtedly be represented.

LEVEL B

THE RESEARCH SEMINAR

The purposes of the Research Seminar would be three in number: (1) transform a problem area, as described by the Research Priorities Committee, into a series of subsidiary research questions which were implied in the problem, (2) coordinate the research efforts of its members to insure that the research produced would be cumulative, (3) integrate the research produced into a coherent whole -- e.g., a mono-

graph addressed to alternative solutions to the named problem.

The Research Seminar might operate as follows:

1. Using the Research Priorities Committee paper as their starting point, these professors would prepare working papers defining as clearly as possible the subsidiary research questions implied by the problem. These preliminary papers would be circulated among the members. The committee would then meet several times to refine these questions, select those to which answers are both important and possible to obtain, and roughly describe the methodologies to be used for each. The travel and lodging costs of members of the seminar would be borne by UCEA. This procedure might well involve a year or more of time.

2. Each member of the Research Seminar would select one or more of these subsidiary questions around which he would organize some of his graduate students' dissertation research efforts (described further below). Thus, on his return to his own university each professor would have: (1) a relatively specific research problem on which he had agreed to work; (2) knowledge of how his particular problem was related to those problems of other seminar members (and hence, possibilities of cooperation); and (3) general methodological guidelines within which to work to help insure comparability and integration of the resulting research.

3. During the course of the research conducted by each professor and some of his graduate students — over the course of a year or more-- the Research Seminar would meet periodically to review progress, modify research direction as necessary, and insure coordination. For example, the committee might recruit additional members whose expertise was needed, pose additional subsidiary research questions when the need became apparent, and coordinate data collection to increase the scope and representativeness of the data base available to each member.

4. As important subsidiary questions are answered, the Research Seminar would make these results available to the professors and UCEA through the dissemination of findings. (This would be in addition to any publications which individual students might produce as a product of their dissertations.) When the work of the Research Seminar is complete (two or more years later) the seminar would be responsible for integrating the work of the Professor-Graduate Student Research Teams and preparing a monograph addressed to the problem originated by the Research Priorities Committee.

LEVEL C

THE PROFESSOR-GRADUATE STUDENT RESEARCH TEAMS

The purpose of the Professor-Graduate Student Research Teams would be to design and conduct the actual research necessary to answer the subsidiary question(s) for which the professor has assumed responsibility. The professor would have a relatively specific research question on his return to his own university and general

guidelines as to appropriate methodologies. The actual research conducted by graduate students as their dissertations, would be derived from the subsidiary questions and methodological guidelines, but not defined by them. That is, the intent would be to insure that the doctoral research of the students at several universities for one or more years was cumulative, but not to constrain the necessary creativity involved in any research effort. These Professor-Graduate Student Research Teams might operate as follows:

1. At his own institution, each professor would elicit the assistance of his doctoral students who were not yet involved in writing a dissertation. Under the guidance of the professor, these students could select a specific research problem derived from the subsidiary question as their dissertation topic. Thus, these resulting dissertations would have a common focus.

2. Since several dissertations would probably be necessary to answer a subsidiary question, the professor might lead a continuing seminar of interested students, and involve new students in the second and subsequent years of the effort. Thus, new students would become familiar with the project and the existing work well prior to the time when they would begin their own research. These seminars would be concerned with specific substantive and methodological issues which arise, and would allow for the redirection and reformulation of research, as well as the initiation of additional dissertation topics as new aspects of a subsidiary question became evident.

3. As work progresses and dissertations are completed, the professors at each university would prepare progress reports, summarizing results and indicating implications for other members of the Research Seminar. The Research Seminar would meet periodically to discuss these reports. When all research is complete the Research Seminar would prepare a comprehensive report of all research and propose answer(s) to the original problem posed by the Research Priorities Committee.

Model II: The Professor Initiated Research Model (PIR)

The Professor Initiated Research (PIR) Model was derived from the procedures described by research administrators conducted in the university setting, and the procedures described in the literature on university based research. The model provided a decentralized approach for organizing doctoral dissertation research.

Interviews with research managers in the university setting revealed two quite similar organizational patterns that form the basis for the PIR Model. Research administrators responsible for the conduct of agricultural research in a university

setting reported the common use of a four-tiered model to deal with large-scale agricultural problems (Figure IV). Interviews with two professors who were directors of federally funded research projects revealed a similar kind of organization (Figure V).

In discussing these two approaches, those responsible for managing the research stressed the importance of the problem originating with the professor. The research administrators perceived their role as (1) "match-maker" - matching the interest of the professor with the funding agencies; and (2) providing an organizational setting designed to stimulate ideas in certain. The professors who were project directors indicated that funding was important, but their primary reason for undertaking the project was "interest" in the problem.

The project directors description of their role provided two additional points that were considered in developing the PIR Model. First of all, they are responsible for attempting to tie the research together; therefore they had the role of ccordinator of the research effort. Secondly, as principal investigators they were first among equals, and therefore had the task of bringing people together to solve the problem. That is, they identified the researchers who made a potential contribution to the project, and attempted to interest each of them to work in a joint effort to solve the problem.

The research managers reported that the real planning for attacking a problem area took place at the research seminar level. As reported by a research administrator, "This is the place where the master problem is broken down into the sub-problems for investigation."

At the actual research level, (the satellite group or the professor student team,) the research managers suggested that a master-apprentice relationship should exist between professor and student. They felt that this type of relationship would provide an opportunity for the student to develop an appreciation for the research process.

A close examination of the Figures IV and V reveals a rather centralized

(Figure IV) and a rather decentralized model (Figure V). In developing the PIR Model, the investigators attempted to capture the best features of both. That both models were successful can be attested to by the fact that they were applied to the organization of research in the university setting.

The basic difference between the PIR Model and the other two models is reflected in Level A where the "Professor" takes full responsibility for identifying the problem for study and organizing the initial meeting of the research seminar group. The other two components of Model II are basically the same as in the COR Model. A diagram of the Model, and a more detailed description and explanation of how it might operate follows. (Diagram on page 33)

LEVEL A

THE PROFESSOR

The objective of the professor concerned is to prepare a proposal to secure funds for the establishment of the initial meeting of a research seminar. That is, a meeting of a group of professors who would work cooperatively on a large-scale complex problem in the field of Educational Administration. He might proceed as follows:

1. The professor identifies a problem which he believes to be of considerable importance to the field of Educational Administration. Further, this problem seems to be of sufficient scope and magnitude to require the efforts of several people over a period of time. He prepares a brief description of the problem, and outlines some of the research questions which the problem seems to imply. He identifies a small number of colleagues (say 7) at various institutions who he believes have the necessary competencies to conduct research on these research questions, and who might be willing to do so.

2. The professor contacts these colleagues, and determines their interest and willingness to meet to discuss the problem area and the research questions it implies. He submits the description of the problem and the outline of subsidiary questions as a proposal requesting funds from UCEA for the support of a single meeting; perhaps two or three days in length. If UCEA provides support for this meeting, the interested individuals determine the initial feasibility of organizing a cooperative attack on the problem. If such cooperation appears to be desirable, those individuals prepare a formal proposal to UCEA requesting funds for the establishment of a Research Seminar. If UCEA provides support, the Research Seminar would be convened.

Model II

PRELIMINARY PIR MODEL

Professor-Initiated Research Model

LEVEL A

PROFESSOR

Purpose: To prepare a proposal dealing with a large complex problem in Educational Administration for the purpose of securing funds for the establishment of the initial meeting of the Research Seminar Group.

Composition: One professor interested in investigating a large complex problem area in Educational Administration.

Product: The initial meeting of the Research Seminar Group.

LEVEL B

RESEARCH SEMINAR

Purposes: (1) To transform the problem area, described by the professor, into a series of subsidiary research questions which were implied by the problem. (2) To coordinate the research efforts of its members to insure that the research produced would be cumulative. (3) To integrate the research produced into a coherent whole.

Composition: Professors (5-7) at various universities identified by the Professor at Level A as having specialized research competence in a given problem area.

Product: A series of subsidiary questions to be researched by the Professor-Graduate Student Research Teams.

LEVEL C

PROFESSOR-GRADUATE STUDENT RESEARCH TEAMS (5-7 TEAMS)

Purpose: To design and conduct the actual research necessary to answer the subsidiary questions.

Composition: A professor, who is a member of the Research Seminar Group, and his doctoral students compose each team.

Product: Dissertation topics to deal with various aspects of the subsidiary questions.

LEVEL B

THE RESEARCH SEMINAR

The purposes of the Research Seminar would be three in number: (1) transform the problem area (as described by the Professor), into a series of research questions which were implied in the problem; (2) coordinate the research efforts of its members to insure that the research produced would be cumulative; and (3) integrate the research produced into a coherent whole -- e.g., a monograph addressed to alternative solutions to the named problem.

The Research Seminar might operate as follows:

1. Using their proposal to UCEA as their starting point, the professors would prepare working papers defining as clearly as possible the subsidiary research questions implied by the problem. These preliminary papers would be circulated among the members. The committee would then meet several times to refine these questions, select those to which answers are both important and possible to obtain, and roughly describe the methodologies to be used for each. The travel and lodging costs of members of the seminar would be borne by UCEA.

2. Each member of the Research Seminar would select one or more of these subsidiary questions around which he would organize some of his graduate students' dissertation research efforts (described further below). Thus, on his return to his own university, each professor would have: (1) a relatively specific research problem on which he had agreed to work; (2) knowledge of how his particular problem was related to those problems of the seminar members (and hence, possibilities of cooperation); and (3) general methodological guidelines within which to work to help insure comparability and integration of the resulting research.

3. During the course of the research conducted by each professor and some of his graduate students -- over the course of a year or more -- the Research Seminar would meet periodically to review progress, modify research direction as necessary, and insure coordination. For example, the committee might recruit additional members whose expertise was needed, pose additional research questions when the need became apparent, and coordinate data collection to increase the scope and representativeness of the data base available to each member.

4. As important subsidiary questions are answered, the Research Seminar would make these results available to the professors and UCEA through the dissemination of findings. (This would be in addition to any publications which individual students might produce as a product of their dissertation.) When the work of Research Seminar is complete (two or more years later), the seminar would be responsible for integrating the work of the Professor-Graduate Student Research Teams and preparing a monograph addressed to the problem originated by the Professor.

LEVEL C

THE PROFESSOR-GRADUATE STUDENT RESEARCH TEAMS

The purpose of the Professor-Graduate Student Research Teams would be to design and conduct the actual research necessary to answer the subsidiary question(s) for which the professor has assumed responsibility. The professor would have a relatively specific research question on his return to his own university and general guidelines as to appropriate methodologies. The actual research, conducted by graduate students as their dissertations, would derive from the subsidiary questions and methodological guidelines, but not defined by them. That is, the intent is to insure that the doctoral research of the students at several universities for one or more years be cumulative, but not to constrain the necessary creativity involved in any research effort. These Professor-Graduate Student Research Teams might operate as follows:

1. At his own institution each professor would elicit the assistance of his doctoral students who were not yet involved in writing a dissertation. Under the guidance of the professor, these students could select a specific research problem derived from the subsidiary question as their dissertation research. Thus, these resulting dissertations would have a common focus.

2. Since several dissertations would probably be necessary to answer a subsidiary question, the professor might lead a continuing seminar of the interested students, and involve new students in the second and subsequent years of the effort. This would help familiarize the new students with the project and the existing work well prior to the time when they would begin their own research. These seminars would be concerned with specific substantive and methodological issues which arise, and would allow for the redirection and reformulation of research, as well as the initiation of additional dissertation research as new aspects of a subsidiary question became evident.

3. As work progresses and dissertations are completed, the professors at each university would prepare progress reports, summaring results and indicating implications for other members of the Research Seminar. The Research Seminar would meet periodically to discuss these reports. When all research is complete, the Research Seminar would prepare a comprehensive report of all research and propose answer(s) to the original question proposed by the Professor.

Model III: The Research Package Model (RP) Model

The Research Package Model was derived, essentially from the following three sources: (1) procedures described by research administrators in interviews conducted in research organizations; (2) suggestions offered by acknowledged reseachers in the field of educational administration; and (3) mutable factors currently existing in the present system of dissertation production in educational administration.

The RP Model - Research Package Model was similar to research procedures in which the basic researcher enlisted aid of the engineer in developing uses for his basic findings. Primarily the RP Model provided a very open mechanism for the distribution of research ideas, yet incorporated the components of a highly structured research organization such as those in which the interviews were conducted.

The basis for this model stemed from the knowledge that most dissertations appeared to follow on the heels of the development of a particular research instrument. For example, a large number of student dissertations on leadership emerged following the development of the LBDQ, dissertations on teacher beliefs regarding control emerged following the development of the PCL, etc. Therefore, the RP Model rather than being a research instrument is a mechanism for promulgating dissertation research ideas all of which are related to a problem area which is being proposed. In short, what would be developed is a series of mini-research proposals which would be made available to all doctoral students in educational administration.

The following diagram is a simplified presentation of the model. This is followed by a more specific description of the procedures involved.

Model III

THE PRELIMINARY RP MODEL

Research Package Model

STEERING COMMITTEE

Purpose: To produce decisions about what problems in the field of Educational Administration are in most need of investigation.

Composition: 5-7 Professors and practitioners of Educational Administration.

Product: A paper which describes and ranks the problems.

RESEARCH DESIGN COMMITTEE

Purpose: (1) To suggest dissertation length research problems that are pertinent to a given problem identified by the Steering Committee. (2) To integrate the results of the dissertations into a coherent whole.

Composition: 5-7 researchers with competence in the identified problem area.

Product: (1) Brief dissertation proposal distributed to all UCEA member institutions. (2) A monograph that integrates the results of dissertations undertaken as a result of the suggested problem descriptions.

THE STEERING COMMITTEE

The purpose of this Committee would be to produce decisions about what problems in the field of Educational Administration are in most need of investigation. One way in which this might be done is as follows:

1. The UCEA Executive Council would appoint a committee of say three professors and three practitioners of educational administration. Their charge would be to prepare a paper, which (a) describes and defines each problem, (b) ranks these problems, and (c) presents arguments as to why they are so ranked.

2. The Steering Committee would meet several times over the course of a year. The initial meeting could be preceded by the circulation of prepared papers from each member delineating high priority problems. Subsequent meetings would then be concerned with more fully defining and describing these problems and ordering them as to their priorities. After agreement is reached on the problems and their ranking, the Steering Committee would prepare and send to the UCEA Plenary Session a paper which describes and ranks the problems. The cost of such meetings would be borne by UCEA.

3. The UCEA Plenary Session would determine which one of the problem areas would serve as a focal point of a concerted research effort. (Such factors as the magnitude of research effort required and availability of competent researchers in a particular area might be some of the considerations given in reaching a decision.) Additionally, the Plenary Session would appoint a committee of seven researchers who have competence in the problem area selected. This committee of seven researchers would constitute the Research Design Committee.

THE RESEARCH DESIGN COMMITTEE

The purpose of this committee would be to prepare a series of dissertation proposals that would help answer subsidiary questions pertinent to the problem area identified by the Steering Committee. Additionally, the Research Design Committee would attempt to integrate accomplished dissertations into a coherent whole. This purpose would be accomplished in the following manner:

The members of this committee would be appointed for a period of three years. In this period of time there would be three distinct functions performed:

1. During the first year the committee would meet frequently to brainstorm potential problems for dissertation length research. (The cost of these meetings would be borne by UCEA.) After these problems with the most potential were determined, each member would take certain problems and write them up as one-page descriptions. These descriptions would be done in a way so as to sufficiently guide a

doctoral student (and/or a professor) of educational administration in the preparation of a research proposal. Each description would cover such areas as: purpose, importance of the problem, appropriate methodology, necessary samples, and problems encountered by other researchers.

The descriptions generated from this one year effort would be reviewed, refined, and then distributed as "Dissertation Ideas for Students in Educational Administration" to all member institutions of UCEA. It should be noted that these "Ideas" would not be so thoroughly developed as to usurp the dissertation chairman's role. To the contrary, it would be expected that the chairman would play a major role in shaping these "Ideas" into dissertation efforts.

Any student using one of the "Ideas" would be expected to send an abstract of his dissertation results to the Research Design Committee.

2. Doctoral students who found a particular "Idea" that was of interest to them would be able to contact the Research Design Committee member who wrote the description. This would help complement the dissertation chairman's role by providing additional specialized expertise while developing the proposal and during the course of the dissertation.

   Honorariums would be paid by UCEA, for the time committee members spent working with students.

3. The committee would convene and review the abstracts that had been submitted over a period of time, say two years. From these abstracts the committee would select those most relevant to the problem area. Based upon this information (which might require contacting students and/or getting copies of whole dissertations) the committee would integrate these findings into a "State of Knowledge" monograph. Additionally, the committee would present recommendations as to what areas of the problem are in need of further examination or have not received adequate examination.

Evaluation of the Models

The three alternative models for dissertation production were evaluated in two ways. First a criteria was specifically developed by which the models could be evaluated. This objective was accomplished by the investigators through a series of meetings. Primarily the criteria were formulated on the basis of the literature review, specifically those developed by Havelock (1969), and Rath (1968) and from the interview data. The findings indicated that a research model which is consciously designed to augment programmatically the knowledge base of a particular field should exhibit the following characteristics: (1) additivity; (2) assessive-

ness; (3) selectivity; (4) adaptivity; (5) coordination; (6) openness; (7) productivity; and lastly (8) viability. The meaning rationale upon which each criterion is based is presented below.

1. Additivity

A system is additive when it purposively integrates the results of separate investigations in a manner which provides solution to a predetermined complex problem.

2. Assessiveness

A system is assessive when it provides for continuous appraisal of the problem area for the purpose of determining where new knowledge is needed.

3. Selectivity

A system is selective when it screens problem areas and identifies these problems which are researchable and answerable within a reasonable time-frame so as to provide usable results to the field of Educational Administration.

4. Adaptivity

An adaptive system is pragmatic in that there is no one fixed mode of organizing people to attack a given problem area.

5. Coordination

A system is coordinative when its components are integrated and synchronized, and when there is an interdependence between all components of the system.

6. Openness

A system is open when any researcher or practitioner regardless of disciplinary affiliation can participate provided he can contribute to the solution of the problem that the system is investigating.

7. Productivity

A system is productive when it increases the volume of research centered on one problem area in a particular field.

8. Viability

A system is viable when it has the capability of attracting and holding researchers to work within it.

The second method of model evaluation was through the solicitation of comments from an 8 member panel of researchers who were recognized for their contributions to the field of Educational Administration.

Evaluation of the COR Model

The following evaluation of the COR Model in terms of the criteria pointed to both the strengths and weaknesses of the Model.

First it appeared that the COR Model did provide for addivity at all three levels. Indeed the integration of research findings first at the Professor-Graduate Student Research Level and then at the Research Seminar Level should result in the solution of the large complex problems the Research Seminar was initially responsible for investigating, i.e., the problem originated previously by the Research Priorities Committee. In addition, the Research Seminar was also to be responsible for preparing a monograph addressed to the problem.

A serious limitation was that the model depended on the professors who were involved in the actual research to also integrate the results. This could present problems in terms of the amount of time a professor would be able to devote to such an endeavor and in his ability to accomplish this integration with other professors. In effect, questions were raised concerning (1) the willingness of professors to cooperate in preparing a monograph, and (2) the ability of professors to accomplish this task in an obkective manner without letting their own personal preferences and biases enter into the picture.

The second criterion on which the COR Model was evaluated was assessiveness. A appraisal procedure was constantly in operation at the Research Seminar Level. This group determined when integration of results was feasible and further, by offering suggestions and criticisms insured that the actual dissertation research was relevant and related to the problem.

Three potential limitations seemed to be present. First, could the professors who were conducting the research also appraise and evaluate it objectively. It did appear, however, that a group of professors working on the same project may act as an evaluator for one another thus a checks and balance situation could exist. Second, were periodic meetings feasible? Studies by Moore (1973) and Kiley (1973) showed that professors and students were willing to collaborate.

The COR Model seemed best to fulfill the criterion of productivity. Through its centralized approach it appeared likely that an increase in the amount of research in a given problem area in the field of Educational Administration would result.

The fourth criterion, selectivity, also appeared to be accomplished by the COR Model. The Research Priorities Committee set the priorities, the Research Seminar produced and selected series of subsidiary questions to be researched by the Professor-Graduate Student Research Teams and the students selected with the assistance and guidance of their professors, dissertation topics dealing with the various aspects of the subsidiary question.

The fifth criterion on which this Model was evaluated was adaptivity. It appeared that the COR Model was only adaptive in terms of group sized. Indeed, the three levels of the model seem quite static and they remained the same for the investigation of each problem. However, since the model presented a basic structure once in operation it appeared that the participants would feel free to organize in any manner they felt was most appropriate.

To a degree the COR Model appeared to exhibit some openness. Specifically at the Research Seminar Level and the Professor-Graduate Student Level interested researchers and student researchers could indicate a willingness to join in the project. However this openness was relatively restricted. That is, individuals could not at will become active participants. They must be selected by either the Executive Council of UCEA, the Research Priorities Committee, or the professor. This may be one positive feature of the model in that the research competency of the researcher is assured.

It also appears that practitioners would have a difficult time becoming involved unless the UCEA Executive Council specifically selected them to serve on the Research Priorities Committee. The manner in which the model was designed did not offer any assurance that this would occur; however, neither did it prevent it.

An additional limitation was that the graduate students who were conducting the

actual research were not involved in the periodic meetings of the Research Seminar. Yet again given that there was flexibility within the model, additional members could be added at the respective levels and at time the participants deemed appropriate.

Perhaps the major strength and major weakness of the COR Model were both visible in the criterion of coordination. The components of the model all served both communication and coordination roles by holding periodic meetings, compiling progress and final reports and producing a monograph. Further, the Seminars at the Professor-Graduate Student Research Team Level served to link the individual efforts of the students together.

Although it is assumed that each professor would serve as the facilitator or linker for his particular team, there was no such linkage role established at the Research Seminar Level. Indeed periodic meetings across geographical barriers could be problematic unless some individual assumed and was responsible for the linkage role.

The eighth and final criterion upon which the COR Model was evaluated was viability. The attractiveness and holding power of the model seemed to be of both an intrinsic and extrinsic nature. The intrinsic rewards for the professor would be that he was working on a problem of interest to him. Further, there would be other researchers interested in the same problem area with whom he could discuss his research. In addition both the professor and the student could derive satisfaction from the knowledge that their research efforts would eventually contribute to the solution of a larger more complex problem.

The extrinsic rewards for the professor were essentially of two kinds. First, the model provided initial funding of the seminar meetings and secondly it provided a mechanism whereby the results of the research could be published through a monograph.

A serious limitation in terms of viability was that it might have virtually no continuous holding power. The funding is extremely limited. Further it did not

provide financial assistance for graduate students, the individuals who were conducting the actual research.

Another weakness of the COR Model, and one not discussed in the above evaluation, was the manner in which individuals were chosen to participate. First, there was no mention of the composition of the Research Priorities Committee. If that committee was made up of only researchers in educational administration would the priorities established be related to the problems of practitioners in the field or would the priorities represent the interests of the members of the committee? Certainly it appeared that a specified composition of the Research Priorities Committee could be included in the description of the model.

Panel Commentary on the COR Model. The respondents commented on the strength of the model primarily in terms of its centralized coordination. Basically if the model could operate as described then there might be considerable and perhaps exciting research output.

Although the respondents listed several negative comments regrading the COR Model, these criticism seemed to be centered around the participants of the model, namely the professors and students. Primarily, the comments concerning the faculty were of two types -- the individualism of the members of the professoriate and their competency. Could professors collaborate across institutional barriers? Could a group of professors set agree upon a set of priorities? Other respondents alluded to the quality and competency of professors in the field of Educational Administration. Specifically the competing demands on their time and also, in some cases, their lack of research skill.

Other comments concerned the graduate students. Would such a model substantially reduce the learning experience of the students? However, when comparing the COR Model with the present system, the former seemed to have more of a potential as a training device than the latter had shown. Indeed the student was aided and assisted under competent supervisors of all phases of the research activity. One panel member offered a suggestion that appeared feasible and worth noting. He

suggested including the student at the research seminar level, thus contributing additionally to the learning experience of the student. Another panel member suggested that the composition of the Research Priorities Committee be specified. This suggestion seemed reasonable since by specifying the composition of the committee, one could insure the participation of practitioners, the individuals who in many instances would be responsible for the implementation of the final results of the research.

Finally the lack of sufficient fundings as well as the lack of a linkage role were perceived as additional weaknesses of the system.

PIR Model Evaluation

Criteria Evaluation. Provision for fulfilling the criterion of additivity was made at the Research Seminar Level. Professors who were members of this seminar group were responsible for integrating the research produced into a coherent whole, e.g., publication of a monograph dealing with the problem. Integration was also achieved at the "Research Team" Level by the individual professor who was responsible for preparing progress reports, summarizing results, and indicating, implicating for other members of the Research Seminar.

Several problems were considered with regard to the ability of this model to achieve additivity. First, the PIR Model depended upon the individuals doing the research to also integrate results. People involved in the actual research may lose the broad perspective of the importance of the total project, i.e., "bits and pieces" of research may become ends unto themselves. However an Advisory Board, composed of people not involved in the research process, could be created and made responsible for the integration of results.

Second, the actual dissertation topics were not developed at the Research Seminar Level rather they were developed by a professor working with his students at the Research Team Level. Thus, there was no guarantee that the individual dissertation topics would be directly related to the major problem area. Indeed while each professor was supposed to leave the initial meetings of the "Research Seminar" with

a clear idea of the subsidiary question he was responsible for, it was conceivable that he and his colleagues might have a different perspective of the same sub-problem. Thus the dissertation size pieces of research produced at the Professor-Student Research Team Level might not provide answers to the complex problem of investigation.

Third, knowing when to integrate the research could prove to be a dilemma for the professors involved. The dissertation research efforts might point out new areas of investigation that must be examined before the complex problem could be solved. There might be a need for almost continuous redirection and reformulation of the research problem.

In terms of the criteria of assessiveness provisions were made for continuous appraisal at both the Research Seminar and Research Team Levels. That is, meetings would be held periodically at both levels to review progress and modify research direction when necessary. One aspect of this type of structure could be problematic. The two levels, the Research Seminar and the Research Team have different perspectives of the problem; the former was interested in the whole problem area while the latter was concerned with a specific subsidiary question. Therefore, concepts of reformulation and redirection could vary at the two levels. Precautions must be taken so that the appraisal effort is complementary and not contradictory.

One final limitation of the appraisal mechanism concerned the professors who were conducting the research and who were also responsible for appraisal. The results of this self-evaluation could be questionable. It was suggested that an Advisory Board be established for the purposes of (1) integrating the research results; and (2) appraising the on-going research.

With regard to the criterion of productivity provisions for increasing the volume of research in a given problem area occured in two ways, first by concentrating the efforts of 5 to 7 professors on the problem (the "Research Seminar") and second by centering the dissertation efforts of doctoral students (the "Research Team") working under the direction of these professors on the problem.

Several problems were related to the criterion of productivity. Primarily the

model had to be generated by one individual whose only incentive was his interest in the problem he selected. Would he be willing to take the time and effort to attract other researchers and funds for the project, further would his interest be sustained over a period of the two years or more that may be required to answer the complex problem? Two additional problems occur in relation to a mobility factor. Professors might change institutions during their commitment to the project and others might not be willing to direct the previously committed graduate students. Also the student's actually had only a voluntary commitment, if he decided to terminate his association with either the "Professor-Graduate Student Research Team" or his ioctoral studies time is lost and the research efforts of other students on the team may be jeopardized.

The fourth criterion upon which the PIR Model was evaluated was selectivity. Provisions for screening were made by UCEA. Since UCEA was the funding agent in effect it judged the importance of the proposed research to the field of Educational Administration. Consideration must be given to several problems that may arise when considering the mechanism by which the model achieved selectivity. What criteria would be used? Would decisions to fund be made on the merits of the research or the reputation of the researcher?

In terms of the criterion of adaptivity provisions were made for flexibility in organization in that the Research Seminar determined how the overall problem area would be examined and the Research Team decided what specific research was needed to answer one subsidiary question. There were several problems at the Research Team Level that might prevent the model from being adaptive. One problem concerned the students involved. It would seem that once the dissertation research question was established, there could be little shift in emphasis since the student expected that his aspect of the study would be completed in a year's time. Finally closer communication links might have to be established since the interrelatedness of the subsidiary questions might require that professors and students at different universities meet periodically for discussion purposes.

Provision is made for openness in that one professor determined membership in the "Research Seminar." Therefore, membership could include a wide variety of individuals, e.g., practicing school administrators, professors outside the field of Educational Administration. Two problems were apparent with regard to the criterion of openness. First, since the PIR Model is a preferential model involvement of other researchers was solely dependent upon the breadth of one professor's contacts. Indeed some researchers who could possibly make a significant contribution to the project may be overlooked, or may not even be known by the professor initiating the research. Second, the student doing the actual research was not included at the Research Seminar Level, the level where the most creative aspect of the research occured.

With regard to the criterion of coordination there was a built-in linkage role for tying the components of the model together. The "Professor," as initiator, of the entire research process, had the linkage role. However, the ability of the linker to tie the system together would be dependent upon the "Professor." Moreover his prestige and efforts could determine the type of contribution that could be expected from other researchers involved in the project. If this professor abdicated his responsibility as coordinator the consequence would be a breakdown in the research project. Also the concept of an inter-university organization may prove to be an obstacle for the coordinator. The larger the project the more people involved and the more difficult it would become to tie the components of the system together.

The eighth and final criterion upon which the PIR Model was evaluated was viability. Provisions were made for attracting graduate students in that they would receive assistance with their research, and they would be able to complete the dissertation requirement. Also provisions were made for attracting and holding researchers in terms of the prestige of being asked to participate; the opportunity to work on a research problem of interest, and the chance to exchange ideas with colleagues interested in doing research on a similar problem. There were several inherent problems with this type of reward structure. First, the participation of

the professor was fundamentally predicated on his interest in the problem. How long could this serve as an incentive? Further, the professor would probably be required to provide more supervision for his doctoral students involved in the project than would be required for the individual student dissertation. Unless he was responsible for organizing the study there would be little recognition for him. Therefore, he may feel little obligation to see the project through to its completion.

Panel Commentary on the PIR Model. Several of the respondents indicated that the loose structure of the model was its inherent weakness. They felt it would take a special person to convince colleagues at other institutes that he had identified an important problem and entice them to collaborate in seeking its solution. What was perceived as a weakness by some was perceived as a strength by others. Four professors felt that the very nature of the research process lent itself to the concept of organizing researchers. Research being more idiosyncratic than corporate in nature, the PIR Model allowed for the needed freedom and creativity that would be more productive than a more structured problem solving approach.

Criticisms at the Research Seminar Level concerned the composition and purpose of the model. First, the voluntary nature of the model at this level, according to several respondents, would lead to more cooperation. One professor pointed out a weakness of this approach, however, the success of the seminar, the entire model for that matter, depended heavily on the collaboration of professors across institutions and based on past experience this was difficult if not impossible to accomplish. Second with regard to representation it was suggested that both professors from Non-UCEA institutions and students should be included at this level. With reference to the latter this would contribute to the concept that the dissertation experience was supposed to teach students how to do research.

Concern about the role of the student in the research process was expressed at the Professor-Student Research Team Level as well as at Level B. One professor expressed concern about severely limiting the opportunity for students to learn about research. In contrast another professor felt that the openness of the PIR Model

would provide a number of alternatives that could be either selected or rejected by the students.

Comments with regard to the entire Model itself were made by the respondents. One panelist expressed concern over the research competence of professors of Educational Administration who as former practicing administrators have hazy research concerns and few research skills. In conclusion one positive comment was noted. One respondent felt that the PIR Model would be easy to implement. He felt it would probably work best where some research had already been done; where professors had given thought and perhaps some work to the area.

Evaluation of the RP Model

Criteria Evaluation. The RP Model fulfilled the criteria of additivity in two ways: (1) the Steering Committee provided the means whereby the problems were defined and agreed upon; (2) the Research Design Committee as one of its functions integrated in the form of a "State of Knowledge" monograph the results of dissertations undertaken as a result of their "ideas." The problems that this model encountered in terms of fulfilling the criteria of additivity were two-fold. Primarily the model did not dictate how the research should be conducted, it simply provided guidelines. Secondly, the time frame suggested by this model was rather loose, thus an individual member of the Research Design Committee who initially generated the idea, when the results were returned to the Committee, might no longer be a member.

In terms of assessiveness the Research Design Committee convened periodically to review the abstracts submitted. This provision allowed an assessment as to what specific areas of the problem needed further explication and/or investigation. Additionally, because the mechanism of this model did not specify who in the field, should undertake the particular problem, there would be more than likely, a repetition of findings among certain problems. Such replication would help reduce the chance factor of one study's findings for a given problem area.

A problem with this model's capacity for assessiveness was in its inability to appraise work being done at the research level until the results were forwarded to the Research Design Committee.

Productivity was the third criterion on which the RP Model was evaluated. The RP Model by its distribution to all UCEA institutions of "Dissertation Ideas" was productive in that it provided a large base of potential research activity in a given problem area. Indeed it could be viewed by doctoral students as an attract means by which they could complete their dissertation degree requirement. A negative feature of this model was that it did not have the capacity to control productivity. In other words there may be too much "productivity" in some areas and little or no activity in other areas.

The first two levels of the "Research Package Model" appeared to fulfill the criterion of selectivity quite well. At the first level, the Steering Committee provided a rank ordering of problems most in need of investigation. An identification as to which of these problems were researchable and answerable occured at the second level, the Research Design Committee. In addition, the monograph prepared by the Research Design Committee served as a useful mechanism for communicating usable results to the field. Further this model was particularly attractive because it could operate independently, as it presently does, from financial support at the research level. A negative feature of this model was that there was no way to ensure that sufficient results (quantitatively and qualitatively) would accrue in a particular time frame for a specific problem area.

The adaptiveness of the RP Model was made possible through the varying degree of association that could exist between the "idea man" on the Research Design Committee and the researcher at the university level. Two aspects of the model seemed to impede adaptiveness. First, the mini-proposals were designed specifically for dissertation - length research. Second, because there was no integrator role at the research level, it was difficult if not impossible, to rearrange researchers according to their expertise when focusing upon a research problem.

With regard to the criterion of openness in certain respects the model could indeed be too open. That is to say, the research "ideas" were accessible to practically all doctoral students of Educational Administration.

The RP Model fulfilled the criterion of coordination in the sense that problems were identified and translated into researchable questions. One negative feature was that there was no systematic coordination of research activities, rather the research activities were generated out of interest on the part of the researcher. Without a more formulized linkage role provided between the Research Design Committee and the research level, the research activity for a given problem area was relatively uncontrolled.

Two positive features of this model with reference to the criterion of viability existed. First, the mini-proposals would provide more direction and assistance in completing the dissertation requirement than that existing in the present system. Second, the model would provide more "thought through" ideas than doctoral students would likely consider for topics.

Panel Commentary on the RP Model. The concerns expressed by the panel of 8 researchers with regard to the Steering Committee (Level I) dealt primarily with whether or not such a committee could identify researchable problems. Indeed another concern was directed toward the problem of 60 individuals (at the Plenary Session) arriving at a consensus with regard to the selection of problems and researchers.

Problems of coordination were noted by respondents at the Research Design Committee Level (Level II). It was suggested that a mechanism to monitor and review on-going research efforts be incorporated at this level. The high degree of openness that the model provided by means of offering general guidelines (mini-proposals) elicited mixed reactions from the research panel. Respondents who viewed the openness as being an advantage felt that there was a potential for more unexpected ideas and approachers arising from this model. On the negative side respondents stated that there would be a greater range of quality utilizing such a

mechanism.

Other comments seemed to revolve around the effect the model could have with reference to research training. Some respondents felt the mini-proposals would detract from the learning experience of the doctoral student. That is, there would be a lack of student participation in the earlier stages of the dissertation process in providing ideas, hypothesis, etc., important activities in teaching students how to do research.

Revisions of the Alternative Models

Revision of the COR Model

Based upon the criteria evaluation and the comments by the 8 member panel the following revisions were made in the COR Model:

Level A: The Research Priorities Committee

First, at this level a coordinator will be named to act as chairman for the committee. His responsibility will be to chair the meetings of the Research Priorities Committee and to act as the liason between the committee and the UCEA Executive Council. Second, the composition of the Research Priorities Committee might include representation from the following groups: (1) educational administration professors who are recognized researchers; (2) practitioners who best know some of the crucial problem areas in school organization and administration that are researchable and who would subsequently be responsible for applying the research findings; and (3) senior representatives from such organizations as the National Council for Educational Research and Development in the United States Office of Education and the newly-formed National Institute for Education. The latter was included because researchers in these agencies tend to have a broad view of research needs in education generally that professors in educational administration might not have. Moreover, they would also have a perspective on how the research efforts in educational administration could best supplement and complement the work of those doing other research in educational administration and those conducting research in other areas of education.

Level B: The Research Seminar

Two revisions are suggested at this level. First the composition of the Research Seminar would remain essentially the same. However, after the first meeting the professors would be accompanied to subsequent seminar meetings by their graduate students as members of their research teams. The second revision includes the appointment or election of one of the professor members to the position of coordinator. The professor's role as coordinator would be one of linkage. That is, he would act as the communication link for the activities of the inter-university Professor-Graduate Student Research Teams. Some responsibilities might entail arranging for meetings, passing on reports as they come in to the other team members, and chairing the various meetings.

Level C: The Professor-Graduate Student Research Team

A final revision of the COR Model concerns funding of the research activities at this level. Primarily this model was intentionally designed to be relatively free from funding. Except for the meetings of the Research Priorities Committee and the Research Seminar the funding for the actual conduct of the research activities was non-existent. While it is recognized that funding is important to the research activity, building in adequate funding, e.g., support for all the research activities of the participating doctoral students, would seemingly make the feasibility of the model untenable. That is, it may be difficult to secure such funding from any source particularly if there were a number of problem areas being investigated. Therefore, minimal funding to the participating students is suggested. Furthermore, they should be encouraged to individually seek support either from within or outside their particular institution.

Revision of the PIR Model

Based upon the forementioned evaluations, the PIR Model was revised.

Level A: The Professor

1. An advisory Board should be created as an adjunct to the Research Seminar. This board would consist of research producing professors identified by members of

the Research Seminar as having specialized competence in the problem area of investigation. They would have two primary responsibilities: (1) assist in integrating the results of the investigation, and (2) assist in appraising research needs for the purpose of suggesting reformation and redirection of the research effort.

2. The Professor who initiates the research study has an important linkage role. He will be the individual primarily responsible for tying the research activities of the project together. Because the success of the research effort hinges on his ability to coordinate the activities of several professors at a number of institutions, this particular role should be spelled out more clearly in the description of activities for Level A of the model.

Level B: Research Seminar

1. The very nature of the organizational scheme suggests a hierarchical arrangement with one professor at the top. Such an arrangement would be repulsive to many professors who place a high value on their autonomy, and resist attempts to organize their activities. It is suggested that the professor who initiates the research effort should be "first among equals." This does not mean that he should direct the activities of the other professors, and this should be clearly specified in the description of activities for the Research Seminar. In order to preserve the sense of equality and to avoid any strain on the system, the description should also suggest that the professors spell out the working relationship at the initial meeting of the group.

2. The description should also include a statement that Professors from all institutions, no matter what their disciplinary affilliation, may participate in the research project as long as they have the specialized competence to assist in the solution of the problem.

3. Since a purpose of the dissertation is to teach the student about the research process, he should participate at the "Research Seminar" Level. This is where many of the creative aspects of the research take place, and it would provide

an opportunity for the student to exchange ideas regarding his research with professors and students from other institutions.

4. There should be more flexibility with regard to the time-frame provided for the solution of problems. The complexity of many of the research problems makes it virtually impossible for them to be solved within a two-year period. Perhaps the urgency of the problem should in some way dictate the time-frame that should be applied to a problem area. Application of this principle could place severe limitations on the quality of the research results depending upon the complexity of the problem. In order to circumvent this problem of a time-frame, perhaps the "Research Seminar" should be responsible for the publication of periodic reports for dissemination to the field. These reports could contain preliminary findings concerning the urgent but complex problems and it would in no means restrict the entire study to a specific time period.

Level C: Professor - Student Research Teams

1. Many of the problems may not be divisible into dissertation size pieces of research. It was proposed that the dissertation serve as the basis for a large-scale research model in Educational Administration. The dissertation should serve as primary means of answering subsidiary questions in a problem area, but the make-up of the Research Team should be expanded beyond doctoral candidates doing their dissertations. Perhaps other professors and other students interested in research would be interested in working on those problems that do not lend themselves to dissertation research. This would provide the needed flexibility which is missing at this level of the model.

2. This concept of expansion could also include students at the master's level who have a thesis requirement for their degree. Inclusion of these two groups at the Research Team Level would tend to broaden the base of the research group, and allow it to handle a variety of research problems.

Revision of the RP Model

Based upon the criteria and panel evaluations the following revisions in the

RP Model were made.

First, at the Steering Committee Level there was a reduction of plenary sessions members involved in the determination of problem areas to be researched and the selection of competent researchers for these areas. Instead of the 60 individuals, a committee of 10 would be appointed by the plenary session.

At the Research Design Committee Level (Level II) membership would not be restricted to researchers of Educational Administration. The research expertise of scientists outside the field of Educational Administration could be called upon. In addition, the methodological approach of the "research ideas" would not be restricted to dissertation length problems. Thus a provision was added which permits "research ideas" of differing levels of difficulty that could possibly encourage professorial research. Another revision at this level would provide suggested means by which "Clusters of Research" ideas could be integrated at the Dissertation Research Level. Finally a monitoring mechanism was suggested, it would be requested that the prospective researchers notify the Research Design Committee of the "Research Idea" that they propose to attack.

In addition a third level was added, the Dissertation Research Level. The procedures at the Dissertation Research Level include: (1) stating that the "Research Ideas" were available to all interested doctoral students; (2) providing for seminars which would allow doctoral students to discuss the "Research Ideas" with members of the Research Design Committee before the particular research was undertaken; and lastly (3) recommending that research findings be submitted to the Research Design Committee at a specified date.

Conclusion

With regard to the models it appeared that the COR Model provides for a centralized scheme which promotes the dissertation activity in a highly systematized manner. The PIR Model provides the professor with a loosely structured decentralized approach for organizing researchers to deal with complex research problems. The very essence of the structure is the voluntary nature of the organization. The

PIR Model is nothing more than a mechanism to facilitate research. It was not intended to suggest the "programming" of researchers, nor was it suggested that this approach be used in answering all research problems. Finally, the RP Model is one that seems to present an open mechanism for the distribution of research ideas. Essentially it provides a means for the development and distribution of a series of mini-research proposals germain to important, researchable problems in Educational Administration.

In conclusion the research yielded three alternatives to the present system of dissertation production in the field of Educational Administration. If these models, when implemented prove to be viable, then a more effective and effieient means of carrying out the dissertation activity will be available. This will provide the professoriate in Educational Administration with alternate management systems for dissertation production designed to augment programmatically the knowledge base in the field.

BIBLIOGRAPHY

Berelson, Bernard. Graduate Education in the United States. New York: McGraw Hill Book Company, Inc., 1960.

Bush, George P. and Hattery, Lowell H. "Teamwork and Creativity in Research," Administrative Science Quarterly, I, No. 3 (December, 1956), 361-372.

Carrese, Louis M. and Baker, Carl G. "The Convergence Techniques: A Method for Planning and Programming of Research Efforts," Management Science, 13, No. 8, April, 1967, 420-438.

Engel, M. "Thesis and Antithesis Reflections on Education of Researchers in Psychology," American Psychologist, 21, No. 8 (1966) 781-87.

Gephart, William J. Application of the Convergence Technique to Basic Studies of The Reading Process. Indiana: Phi Delta Kappan, Inc., 1970. (National Center for Educational Research and Develop ment Project Number 8-0737).

Goode, H. H. and Machol, R. W. Systems Engineering. New York: McGraw-Hill, 1957.

Hagstrom, Warren O. Social Control in Modern Science. Unpublished Ph.D. Dissertation, University of California, Berkeley, 1962.

Hagstrom, Warren O. The Scientific Community. New York: Basic Books, Inc., 1965.

Haller, Emil J. "The Questionnaire Perspective in Educational Administration: Notes on the Social Context of Method," paper presented at the 1970 meeting of the American Educational Research Association, Minneapolis, Minnesota.

Havelock, Ronald G. Planning for Innovation: A Comparative Study of the Literature on the Dissemination and Utilization of Scientific Knowledge. Research Project supported by U. S. Office of Education and the Department of Health, Education, and Welfare, Ann Arbor, Michigan: Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, 1969.

Heiss, Ann M. "Berkeley Doctoral Students Appraise their Academic Programs," Educational Record, 48 (Winter, 1967), 30-44.

Film 561 Kanter, Hershel. Research & the Organization: A Decision-Making Approach. Dissertation: Univeristy of California: Berkeley, Political Science in Public Administration, 1964, 63-3015 - University Microfilms, Ann Arbor, Michigan.

Kaplan, Norman. "The Role of the Research Administrator, " Administrative Science Quarterly, 4, No. 1 (June, 1959), 20-42.

Levien, Roger E. National Institute of Education: Preliminary Plan for the Proposed Institute. California: Rand Corporation, February, 1971.

Longton, P. A. "Models, Decisions, and Operational Research - Introduction and Commentary." in Operational Research and the Social Sciences. Edited by J. R. Lawrence. New York: Tavistock Publications (1966), 555-564.

National Institute of Ecology - An Operational Plan. Prepared by the Ecological Society of American and Peat, Marwich, Mitchell and Co. National Science Foundation Grant GB 6890-002 (December, 1970).

Pelz, Donald C. and Andrews, Frank M. Scientists in Organizations. New York: John Wiley and Sons, Inc., 1966.

Rankin, Alan C. "The Administrative Processes of Contract and Grant Research," Administrative Science Quarterly, I, No. 3 (December, 1956), 275-294.

Rath, Gustave J. "People, Money and R and D Organizations," in The Research Society. Edited by Evelyn Glatt and Maynard W. Shelly. New York: Gordon and Breach Science Publishers (1968), 103-137.

Robbins, Melvin P. and Williams, Trevor. "The Doctoral Disdertation and Discipline of Educational Administration," paper presented at the 1970 meeting of the American Educational Research Association, Minneapolis, Minnesota.

Sabin, Albert B. "Collaboration for Accelerating Progress in Medical Research," Science, 156 (June 23, 1967), 1568-71

Sanders, Royden C., Jr. "Interface Problems Between Scientists and Others in Technically Oriented Companies," in The Management of Scientists. Edited by Karl Hill. Boston: Beacon Press (1964), 75-86.

Schmitt, Roland and Roberts, Richard. "Creativity Versus Planning - You Can Have Both," Innovation, 52, No. 19 (March, 1971) 52-59. General Electric Company, Corporate Research and Development - Reprint 6912.

Sherwin, Chalmers W. and Isenson, Raymond S. "Project Hindsight," Science, 156 (June, 23, 1967), 1571-77.

Siepert, Albert F. "Creating the Management Climate for Effective Research in Government Laboratories," in The Management of Scientists. Edited by Karl Hill. Boston: Beacon Press (1964), 870100.

Smith, Clagett G. "Scientific Performance and the Composition of Research Teams," Administrative Science Quarterly, 16, No. 4 (December, 1971), 486-496.

The National Cancer Institute. Washington: Public Health Service Publication No. 458. National Institutes of Health (U.S. Department of Health, Education, and Welfare. 1970).

Weinberg, Alvin M., Reflections on Big Science. Cambridge, Massachusetts; The MIT Press, 1967.

Wilson, Kenneth M. Of Time and the Doctorate. Report of an Inquiry into the Duration of Doctoral Study. Georgia; Southern Regional Education Board, 1965.

Kiley, Lawrence. Toward A Knowledge Production System in the Field of Educational Administration: The Student's View (Unpublished Dissertation: Cornell University) 1973 - - - PIR Model Development, Evaluation and Revision.

Moore, Parker. Toward A Knowledge Production System in the Field of Educational Administration: The Professor's View (Unpublished Dissertation: Cornell University) 1973 - - - RP Model Development, Evaluation and Revision.